

IN THE CLAIMS

The following is a complete listing of the claims. This listing replaces all earlier versions and listings of the claims.

Claim 1 (currently amended): An image processing apparatus comprising:

a detector, arranged to detect an image area ~~excluding a frame image~~ contained in an inputted image having a frame image, wherein the detected image area does not include the frame image of the inputted image;

a generator, arranged to generate correction information of the detected image area; and

a corrector, arranged to correct the image area based on the generated correction information,

wherein said detector ~~detects~~ differentiates the frame image, which has gradation, of the inputted image from the detected image area by using a detection method that detects pixels by determining whether or not a pixel of interest and pixels adjacent to the pixel of interest have a same hue and a difference between lightness and saturation having a predetermined value or less, and recognizes the frame image, which has the gradation, by determining detecting the consecutiveness upper, lower, left and right ends of the positions of frame image from the detected pixels.

Claim 2 (canceled)

Claim 3 (previously presented): The apparatus according to claim 1, wherein said detector identifies the image area other than the frame image based on a detection result of the pixel constructing the frame image and supplies information representing the identified image area to said generator and said corrector .

Claim 4 (previously presented): The apparatus according to claim 3, wherein said detector scans the image in a horizontal direction in units of columns and detects, as two ends of the image area in the horizontal direction, a first column having a pixel determined not to construct the frame image and a next column having a pixel determined to construct the frame image.

Claim 5 (previously presented): The apparatus according to claim 3, wherein said detector scans the image in a vertical direction in units of rows and detects, as two ends of the image area in the vertical direction, a first row having a pixel determined not to construct the frame image and a next row having a pixel determined to construct the frame image.

Claim 6 (previously presented): The apparatus according to claim 3, wherein, after correction by said corrector has ended, said detector executes identification processing of an image area other than the frame image again.

Claim 7 (previously presented): The apparatus according to claim 1, wherein said generator generates, as the correction information, highlight and shadow points and white and black balances of the image area.

Claim 8 (previously presented): The apparatus according to claim 7, wherein said corrector corrects gradation of the image area based on the highlight and shadow points and the white and black balances, which are generated by said generator.

Claim 9 (currently amended): An image processing method comprising the steps of:

detecting an image area ~~excluding a frame image~~ contained in an inputted image having a frame image, wherein the detected image area does not include the frame image of the inputted image;

generating correction information of the detected image area; and
correcting the image area based on the generated correction information,

wherein, in said detecting step, the frame image, which has gradation, is ~~detected~~ differentiated from the detected image area by using a detection method that detects pixels by determining whether or not a pixel of interest and pixels adjacent to the pixel of interest have a same hue and a difference between lightness and saturation having a predetermined value or less, and recognizes the frame image, which has the gradation, by determining detecting the consecutiveness upper, lower, left and right ends of the positions of frame image from the detected pixels.

Claim 10 (canceled)

Claim 11 (previously presented): The method according to claim 11, further comprising the steps of:

identifying the image area other than the frame image based on a detection result of the pixel constructing the frame image; and

supplying information representing the identified image area for generation processing of the correction information and correction processing of the image area.

Claim 12 (previously presented): The method according to claim 11, wherein said detecting step comprises scanning the image in a horizontal direction in units of columns and detecting, as two ends of the image area in the horizontal direction, a first column having a pixel determined not to construct the frame image and a next column having a pixel determined to construct the frame image.

Claim 13 (previously presented): The method according to claim 11, wherein said detecting step comprises scanning the image in a vertical direction in units of rows and detecting, as two ends of the image area in the vertical direction, a first row having a pixel determined not to construct the frame image and a next row having a pixel determined to construct the frame image.

Claim 14 (previously presented): The method according to claim 11, wherein, after correction processing has ended, identification processing of an image area other than the frame image is executed again.

Claim 15 (previously presented): The method according to claim 9, wherein said generating step comprises generating, as the correction information, highlight and shadow points and white and black balances of the image area.

Claim 16 (previously presented): The method according to claim 15, wherein said correcting step comprises correcting gradation of the image area based on the highlight and shadow points and the white and black balances, which are generated in said generating step.

Claim 17 (currently amended): A computer program product embodying computer program codes for executing an image processing method, the method comprising the steps of:

detecting an image area ~~excluding a frame image~~ contained in an inputted image having a frame image, wherein the detected image does not include the frame image of the inputted image;

generating correction information of the detected image area; and
correcting the image area based on the generated correction information,

wherein, in the detection step, the frame image, which has gradation, is ~~detected~~ differentiated from the detected image area by using a detection method that detects pixels by determining whether or not a pixel of interest and pixels adjacent to the pixel of interest have a same hue and a difference between lightness and saturation having a predetermined value or less, and recognizes the frame image, which has the gradation, by ~~determining~~ detecting the consecutiveness upper, lower, left and right ends of the positions of frame image from the detected pixels.

Claims 18-20 (canceled)